

Abstract

Courses timetabling and students scheduling is one of the complex scheduling problem that has always faced by any university or institution each semester. Each university or institution should be able to make a good courses schedule with considering the environment and various aspects like lecturers, students, space and time resources available. This problem becomes very complex when the number of students and courses that are scheduled for the meeting was huge and numbers of special restrictions that set by the related universities or institutions such as the lectures distribution schedule, classes distribution schedule, students distribution schedule, meeting the provisions of the distance between subjects and so forth.

To overcome this problem, we need a good optimization method. One method of optimization is quite good in the case of combinatorial or continuous nature is use the Harmony Search algorithm. HS is a metaheuristic population-based algorithm that mimics the evolution that occurs in the process of musical performance [8]. Based on several studies conducted by Zong Woo Geem, HS has a very good performance for combinatorial optimization problems and continuous optimization (real function) [8]. In addition, there are parameter in HS that is called PAR (Pitch Adjustment Rate) which is useful in improvising new solutions and highly influential in the discovery of the optimal solution. And also used greedy search method for generate an initial solution or as HM (Harmony Memory) initialization.

In this Final Task, do an analysis of the selection of HS parameters in the discovery scheduling solution that consisting of PAR (Pitch Adjustment Rate), HMS (Harmony Memory Size) and the amount of improvisation. Based on the analysis and the results obtained, it is known that the size of the PAR is very influential in the discovery of the optimal solution, the greater of the value of HMS will make the resulting solution is more varied and better, but it requires a long execution time and the greater the amount of improvisation will make the resulting solution becomes more optimal, but a very large number of improvements will not help much in producing a better fitness value, that is visible from the less amount of impairment of fitness.

Keywords : courses timetabling and students scheduling, harmony search, greedy search, HS parameters, optimization method.